

## Field Monitoring Report -- Pebble Copper/Gold Exploration Project --

Personnel: Bill Cole, DNR, Mining Section	Inspection Date: 9/14/2011
Mike Walton, DNR, Water Section	Site Contact: Jeff Norberg
	APMA #: A116118
<b>■ Inspection Type:</b> <input type="radio"/> Complete: X <input type="radio"/> Partial: <input type="radio"/> Follow-up: <input type="radio"/> Response to Public Complaint:	<b>■ Wildlife Observed:</b> <input type="radio"/> Bear: 1 black bear <input type="radio"/> Caribou: <input type="radio"/> Moose: <input type="radio"/> Waterfowl: Approximately 10 swans, 1 raven <input type="radio"/> Fish: <input type="radio"/> Other:
<b>■ Weather Conditions:</b> <input type="radio"/> Temperature: 40-45° F <input type="radio"/> Wind: 15-20 mph <input type="radio"/> Precipitation: Rained part of the day <input type="radio"/> Visibility: 15 miles <input type="radio"/> Sky Conditions: Overcast <input type="radio"/> Ground Conditions: Wet	
<b>■ Comments:</b> Inspected the Big Wiggly Lake fuel storage site. There was a small spill of fuel onto the tundra on September 13, 2011, the day prior to this inspection. The spill was <2 gallons, and will be reported in the 30-day report to ADEC as required. The spill was excavated and removed for disposal. No remaining stains or odor were observed at the site. See Photo #21. Ten swans were observed flying over the Big Wiggly Lake fuel storage facility. A black bear was seen on the flight back to Iliamna.	
<b>■ Recommendations:</b> None	
<b>■ Actions Needed:</b> None	

Drill Hole/Site No.: DH 11537	Date: 9/14/2011
Rig No.: 3	Time: 1:50 pm
Activity: Drilling at 2,926'	
<ul style="list-style-type: none"> <li>■ Condition of Drilling Site:</li> </ul>	<ul style="list-style-type: none"> <li>■ Sump Pit (continued):</li> </ul>
<ul style="list-style-type: none"> <li>○ Distance from waterbody: 300'</li> </ul>	<ul style="list-style-type: none"> <li>○ Location and extent of discharged material: Not observed</li> </ul>
<ul style="list-style-type: none"> <li>○ Location of fuel storage: Next to drill on S side</li> </ul>	<ul style="list-style-type: none"> <li>○ Topsoil, muck, tundra stockpiled: Yes</li> </ul>
<ul style="list-style-type: none"> <li>○ Sorbent pads present: Yes</li> </ul>	<ul style="list-style-type: none"> <li>○ Hose color: Black</li> </ul>
<ul style="list-style-type: none"> <li>○ Tundra mat: Yes</li> </ul>	
<ul style="list-style-type: none"> <li>○ Pipe off tundra: Yes</li> </ul>	<ul style="list-style-type: none"> <li>■ Drill Water Supply:</li> </ul>
<ul style="list-style-type: none"> <li>○ Litter: None</li> </ul>	<ul style="list-style-type: none"> <li>○ Stream, lake/pond: Stream</li> </ul>
<ul style="list-style-type: none"> <li>○ Trash containment: Yes</li> </ul>	<ul style="list-style-type: none"> <li>○ Location: 2,400' north of drill</li> </ul>
<ul style="list-style-type: none"> <li>○ Sanitary facilities: Yes</li> </ul>	<ul style="list-style-type: none"> <li>○ Adequate water flow and depth for fish passage in streams: Yes</li> </ul>
<ul style="list-style-type: none"> <li>○ Any spills or staining: No</li> </ul>	<ul style="list-style-type: none"> <li>○ Evidence of significant impacts to riparian vegetation or stream banks: No</li> </ul>
<ul style="list-style-type: none"> <li>○ General impression: Clean site</li> </ul>	<ul style="list-style-type: none"> <li>○ General impression of water body (i.e. clear, turbid, tannic): Clear</li> </ul>
	<ul style="list-style-type: none"> <li>○ Intake description: Johnson screen</li> </ul>
<ul style="list-style-type: none"> <li>■ Drilling Activity:</li> </ul>	<ul style="list-style-type: none"> <li>○ Structure clear of debris: Yes</li> </ul>
<ul style="list-style-type: none"> <li>○ Drill additives in use: Extreme No. 1</li> </ul>	<ul style="list-style-type: none"> <li>○ Mesh size: 1 mm</li> </ul>
<ul style="list-style-type: none"> <li>○ Recirculation tank: Yes</li> </ul>	<ul style="list-style-type: none"> <li>○ Submerged: Yes</li> </ul>
<ul style="list-style-type: none"> <li>○ Water discharged: No</li> </ul>	<ul style="list-style-type: none"> <li>○ Fuel/generator location to source: 120'</li> </ul>
<ul style="list-style-type: none"> <li>○ Artesian zone encountered: No</li> </ul>	<ul style="list-style-type: none"> <li>○ Catch basin for fuel supply: Yes</li> </ul>
	<ul style="list-style-type: none"> <li>○ Sorbent pads: Yes</li> </ul>
<ul style="list-style-type: none"> <li>■ Sump Pit:</li> </ul>	<ul style="list-style-type: none"> <li>○ Hose color: Yellow</li> </ul>
<ul style="list-style-type: none"> <li>○ Location: West side of drill</li> </ul>	
<ul style="list-style-type: none"> <li>○ Discharge trench: Yes</li> </ul>	<ul style="list-style-type: none"> <li>■ Other Comments:</li> </ul>
<ul style="list-style-type: none"> <li>○ Dimensions of pit: 3 pits, all about 5'X20'</li> </ul>	
<ul style="list-style-type: none"> <li>○ In use: Yes</li> </ul>	



Photo #1. Drill #3 on DDH 11537.



Photo #2. Fuel supply for drill #3.



Photo #3. Discharge trench at drill #3.

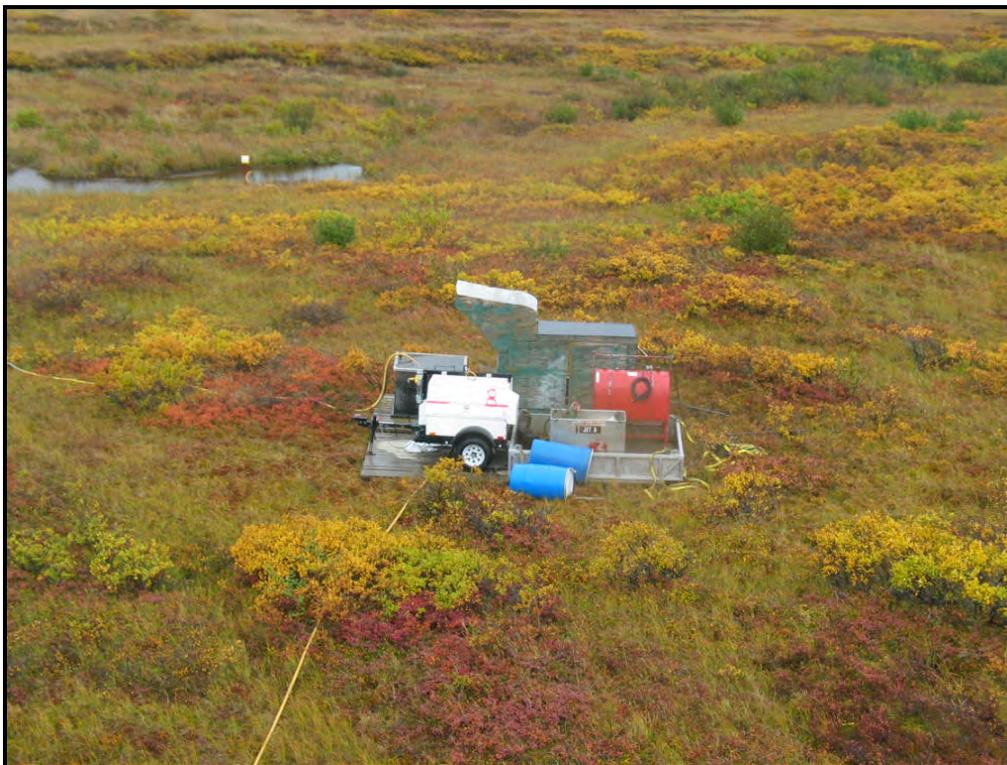


Photo #4. Water pump generator and fuel supply for DDH 11537. Water source and takepoint in background.



Photo #5. Sump pits and mud tank at DDH 11537.

Drill Hole/Site No.: SH11-AP	Date: 9/14/2011
Rig No.: 4, rotary	Time: 1:20 pm
Activity: Collaring Geo-tech hole	
<ul style="list-style-type: none"> <li>■ Condition of Drilling Site:</li> </ul>	<ul style="list-style-type: none"> <li>■ Sump Pit (continued):</li> </ul>
<ul style="list-style-type: none"> <li>○ Distance from waterbody: 150'</li> </ul>	<ul style="list-style-type: none"> <li>○ Location and extent of discharged material: Minor discharge uphill from drill</li> </ul>
<ul style="list-style-type: none"> <li>○ Location of fuel storage: next to drill</li> </ul>	<ul style="list-style-type: none"> <li>○ Topsoil, muck, tundra stockpiled: Yes</li> </ul>
<ul style="list-style-type: none"> <li>○ Sorbent pads present: Yes</li> </ul>	<ul style="list-style-type: none"> <li>○ Hose color: Black</li> </ul>
<ul style="list-style-type: none"> <li>○ Tundra mat: Yes</li> </ul>	
<ul style="list-style-type: none"> <li>○ Pipe off tundra: Yes</li> </ul>	<ul style="list-style-type: none"> <li>■ Drill Water Supply:</li> </ul>
<ul style="list-style-type: none"> <li>○ Litter: 1 drink bottle</li> </ul>	<ul style="list-style-type: none"> <li>○ Stream, lake/pond: Pond</li> </ul>
<ul style="list-style-type: none"> <li>○ Trash containment: Yes</li> </ul>	<ul style="list-style-type: none"> <li>○ Location: 800' West of drill</li> </ul>
<ul style="list-style-type: none"> <li>○ Sanitary facilities: Yes</li> </ul>	<ul style="list-style-type: none"> <li>○ Adequate water flow and depth for fish passage in streams: NA, pond bank full</li> </ul>
<ul style="list-style-type: none"> <li>○ Any spills or staining: No</li> </ul>	<ul style="list-style-type: none"> <li>○ Evidence of significant impacts to riparian vegetation or stream banks: No</li> </ul>
<ul style="list-style-type: none"> <li>○ General impression: Other than the one bottle, drill site is in good order</li> </ul>	<ul style="list-style-type: none"> <li>○ General impression of water body (i.e. clear, turbid, tannic): slightly turbid</li> </ul>
	<ul style="list-style-type: none"> <li>○ Intake description: Johnson screen</li> </ul>
<ul style="list-style-type: none"> <li>■ Drilling Activity:</li> </ul>	<ul style="list-style-type: none"> <li>○ Structure clear of debris: Yes</li> </ul>
<ul style="list-style-type: none"> <li>○ Drill additives in use: Quik-Gel</li> </ul>	<ul style="list-style-type: none"> <li>○ Mesh size: 1 mm</li> </ul>
<ul style="list-style-type: none"> <li>○ Recirculation tank: Yes</li> </ul>	<ul style="list-style-type: none"> <li>○ Submerged: Yes</li> </ul>
<ul style="list-style-type: none"> <li>○ Water discharged: Excess clean water discharged to tundra</li> </ul>	<ul style="list-style-type: none"> <li>○ Fuel/generator location to source: 120' S</li> </ul>
<ul style="list-style-type: none"> <li>○ Artesian zone encountered: No</li> </ul>	<ul style="list-style-type: none"> <li>○ Catch basin for fuel supply: Yes</li> </ul>
	<ul style="list-style-type: none"> <li>○ Sorbent pads: Yes</li> </ul>
<ul style="list-style-type: none"> <li>■ Sump Pit:</li> </ul>	<ul style="list-style-type: none"> <li>○ Hose color: Yellow</li> </ul>
<ul style="list-style-type: none"> <li>○ Location: SE side of drill</li> </ul>	
<ul style="list-style-type: none"> <li>○ Discharge trench: Yes</li> </ul>	<ul style="list-style-type: none"> <li>■ Other Comments:</li> </ul>
<ul style="list-style-type: none"> <li>○ Dimensions of pit: one pit, 5'X6'</li> </ul>	
<ul style="list-style-type: none"> <li>○ In use: Yes</li> </ul>	



Photo #6. Dril #4 on Geo-tech hole SH11-AP.



Photo #7. Water intake for SH11-AP.



Photo #8. Water source for SH11-AP. Pond was bank full.



Photo #9. Water intake mesh typically used at Pebble Project. Mesh size is 1 mm.

Drill Hole/Site No.: GH11-272S	Date: 9/14/2011
Rig No.: 5, Sonic drill	Time: 1:50 pm
Activity: Finishing 70' Geo-tech hole	
<ul style="list-style-type: none"> <li>■ Condition of Drilling Site:</li> </ul>	<ul style="list-style-type: none"> <li>■ Sump Pit (continued):</li> </ul>
<ul style="list-style-type: none"> <li>○ Distance from waterbody:</li> </ul>	<ul style="list-style-type: none"> <li>○ Location and extent of discharged material: None</li> </ul>
<ul style="list-style-type: none"> <li>○ Location of fuel storage: Adjacent to drill</li> </ul>	<ul style="list-style-type: none"> <li>○ Topsoil, muck, tundra stockpiled: Yes</li> </ul>
<ul style="list-style-type: none"> <li>○ Sorbent pads present: Yes</li> </ul>	<ul style="list-style-type: none"> <li>○ Hose color: White</li> </ul>
<ul style="list-style-type: none"> <li>○ Tundra mat: Yes</li> </ul>	
<ul style="list-style-type: none"> <li>○ Pipe off tundra: Yes</li> </ul>	<ul style="list-style-type: none"> <li>■ Drill Water Supply:</li> </ul>
<ul style="list-style-type: none"> <li>○ Litter: No</li> </ul>	<ul style="list-style-type: none"> <li>○ Stream, lake/pond: Well, DDH 5330</li> </ul>
<ul style="list-style-type: none"> <li>○ Trash containment: Yes</li> </ul>	<ul style="list-style-type: none"> <li>○ Location: 300' north</li> </ul>
<ul style="list-style-type: none"> <li>○ Sanitary facilities: Yes</li> </ul>	<ul style="list-style-type: none"> <li>○ Adequate water flow and depth for fish passage in streams: NA</li> </ul>
<ul style="list-style-type: none"> <li>○ Any spills or staining: No</li> </ul>	<ul style="list-style-type: none"> <li>○ Evidence of significant impacts to riparian vegetation or stream banks: NA</li> </ul>
<ul style="list-style-type: none"> <li>○ General impression: Site is clean, but some materials were lying on the tundra.</li> </ul>	<ul style="list-style-type: none"> <li>○ General impression of water body (i.e. clear, turbid, tannic): NA</li> </ul>
	<ul style="list-style-type: none"> <li>○ Intake description: NA</li> </ul>
<ul style="list-style-type: none"> <li>■ Drilling Activity:</li> </ul>	<ul style="list-style-type: none"> <li>○ Structure clear of debris: NA</li> </ul>
<ul style="list-style-type: none"> <li>○ Drill additives in use: None</li> </ul>	<ul style="list-style-type: none"> <li>○ Mesh size: NA</li> </ul>
<ul style="list-style-type: none"> <li>○ Recirculation tank: Yes</li> </ul>	<ul style="list-style-type: none"> <li>○ Submerged: NA</li> </ul>
<ul style="list-style-type: none"> <li>○ Water discharged: No</li> </ul>	<ul style="list-style-type: none"> <li>○ Fuel/generator location to source: Adjacent</li> </ul>
<ul style="list-style-type: none"> <li>○ Artesian zone encountered: No</li> </ul>	<ul style="list-style-type: none"> <li>○ Catch basin for fuel supply: Yes</li> </ul>
	<ul style="list-style-type: none"> <li>○ Sorbent pads: Yes</li> </ul>
<ul style="list-style-type: none"> <li>■ Sump Pit:</li> </ul>	<ul style="list-style-type: none"> <li>○ Hose color: Yellow</li> </ul>
<ul style="list-style-type: none"> <li>○ Location: 30' from drill</li> </ul>	
<ul style="list-style-type: none"> <li>○ Discharge trench: Yes</li> </ul>	<ul style="list-style-type: none"> <li>■ Other Comments:</li> </ul>
<ul style="list-style-type: none"> <li>○ Dimensions of pit: 1 pit, 4'X5'</li> </ul>	
<ul style="list-style-type: none"> <li>○ In use: No</li> </ul>	



Photo #10. Drill #5 on GH11-272S.



Photo #11. Sump pit at GH11-272S. Black plastic under stockpiled sump material is placed to protect tundra.

Drill Hole/Site No.: DDH 11536	Date: 9/14/2011
Rig No.: 2	Time: 2:40 pm
Activity: Drilling at 2,715	
■ Condition of Drilling Site:	■ Sump Pit (continued):
○ Distance from waterbody: 100'	○ Location and extent of discharged material: 4,500' west, with intermediate sump pits 2,500' W
○ Location of fuel storage: Next to drill	○ Topsoil, muck, tundra stockpiled: Yes
○ Sorbent pads present: Yes	○ Hose color: White
○ Tundra mat: Yes	
○ Pipe off tundra: Yes	■ Drill Water Supply:
○ Litter: None	○ Stream, lake/pond: Stream
○ Trash containment: Yes	○ Location: 130' south of drill
○ Sanitary facilities: Yes	○ Adequate water flow and depth for fish passage in streams: Yes
○ Any spills or staining: No	○ Evidence of significant impacts to riparian vegetation or stream banks: No
○ General impression: Clean drill site	○ General impression of water body (i.e. clear, turbid, tannic): Clear, slight tannic color
	○ Intake description: Johnson screen
■ Drilling Activity:	○ Structure clear of debris: Yes
○ Drill additives in use: Extreme #1, Quik-Gel	○ Mesh size: 1 mm
○ Recirculation tank: Yes	○ Submerged: Yes
○ Water discharged: No	○ Fuel/generator location to source: No fuel, electric power supplied from drill to submerged electric pump to protect wetland
○ Artesian zone encountered: No	○ Catch basin for fuel supply: NA
	○ Sorbent pads: NA
■ Sump Pit:	○ Hose color: NA
○ Location: 130' north of drill	

○ Discharge trench: No, see comments	■ Other Comments: Drill discharge caught in tank under drill, then hosed to sump pits.
○ Dimensions of pit:	This hole is in a wetland, and extra precautions were taken. Drill discharge was pumped 4,500' up hill, out of wetland.
○ In use:	



Photo #12. Drill #2 on DDH 11536.



Photo #13. Sump pits at DDH 11536. Tundra pads to protect wetland.



Photo #14. Stockpiled tundra at DDH 11536.



Photo #15. Stockpiled fill from mud sump. The black plastic is now being laid down beneath the fill to protect tundra.



Photo #16. Silt screen and sorbent tubes to prevent silty water from drill entering wetland.



Photo #17. Water intake for DDH 11536.

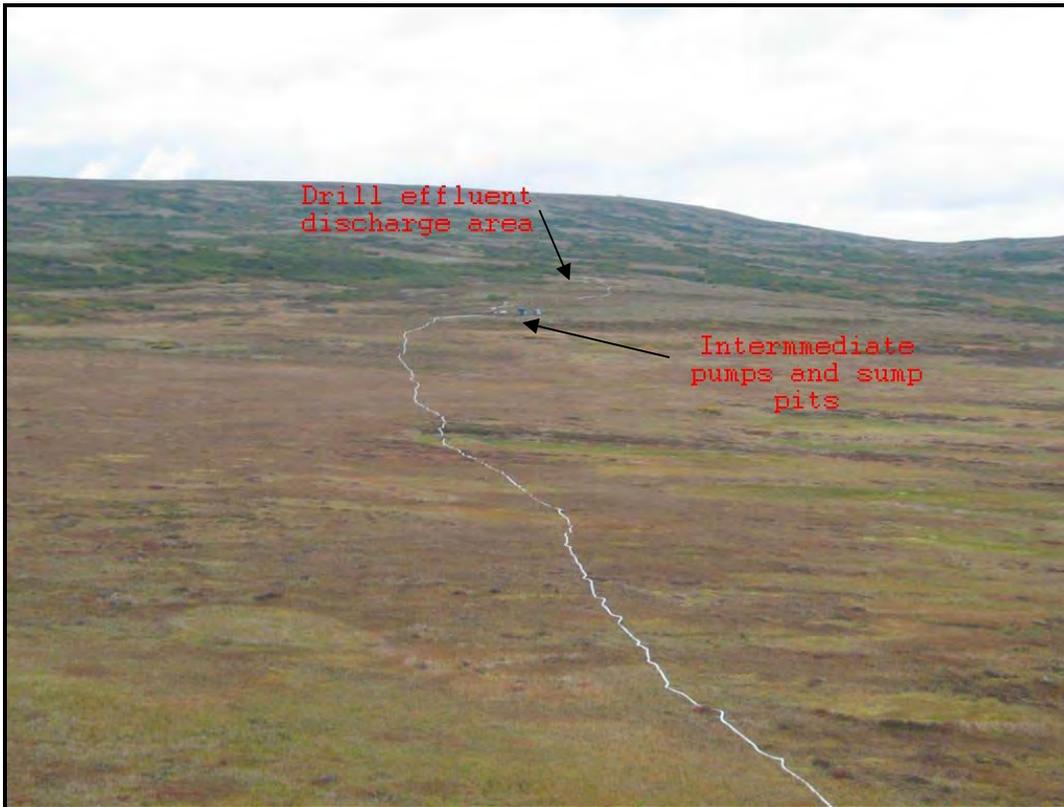


Photo #18. Drill effluent discharge line from DDH 11536.



Photo #19. Intermediate pump station and sump pits above DDH 11536. Intermediate pump was needed to transport drilling effluent away from wetland.



Photo #20. Drill discharge area from DDH 11536.



Photo #21. Area of September 13, 2011 fuel spill at Big Wiggly Lake.



Photo #22. Helicopter fueling facility at Big Wiggly Lake.